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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,290	05/25/2000	James E Carey	1958.2001-000	5934

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EXAMINER

VO, LILIAN

ART UNIT PAPER NUMBER

2195

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/578,290

Applicant(s)

CAREY, JAMES E

Examiner

Lilian Vo

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. **Claims 1 – 41** are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 5, 6, 7, 10, 13 - 16, 19, 22 - 25, 28, 31 – 33, 36, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maresco (US 6,418,458) in view of Sullivan (US Pat. 5,438,680).

4. Regarding **claim 1**, Maresco discloses in a multithreaded computing environment, a method of processing computing tasks (abstract, col. 1, lines 15 - 21), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract, col. 1, lines 45 – 57, col. 2, lines 27 – 30, col. 3, lines 37 - 38);

defining a plurality of task queues (abstract), each task queue capable of queuing a plurality of tasks (abstract, col. 6, lines 12 - 13);

associating each task queue with a respective worker thread (col. 3, lines 49 – 60, col. 5, lines 26 – 47, col. 6, lines 13 – 17, fig. 4).

Maresco discloses of placing tasks in task queue (col. 3, lines 52 – 57) but did not clearly teach the process of assigning a task to a task queue in an essentially random fashion. This feature can be found in Sullivan in which tasks are simply assigned to processors in a generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this feature to Maresco to optimize the system performance with task assignment.

5. Regarding **claim 4**, Maresco discloses the method of claim 1 further comprising, from a work thread, processing a task from the associated task queue (abstract, col. 2, lines 27 – 30, col. 3, lines 37 – 38, col. 6, lines 12 - 17).

6. Regarding **claim 5**, Maresco discloses the method of claim 1 further comprising, from a work thread, processing a task from a task queue not associated with the thread (col. 3, lines 20 – 22, 37 – 60, col. 5, lines 26 - 30).

7. **Claims 6, 7, 10, 13 - 16, 19, 22 - 25, 28, 31 – 33, 36, 39 and 40 and 36** are rejected on the same ground as stated in claims 1, 4 and 5 above.

8. Claims 2, 3, 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maresco (US 6,418,458) in view of Sullivan (US Pat. 5,438,680) as applied to claims 1, 6, 10, 15, 19, 24, 28 and 33 above, and further in view of Najork et al. (US Pat. 6,377,984, hereinafter Najork).

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9. Regarding **claims 2 and 3**, Maresco and Sullivan did not clearly specify the steps of assigning a task comprising selecting an empty task queue and determining whether the selected task queue is in a busy state. Nevertheless, these teaching steps are disclosed in Najork's invention (col. 3, lines 22 – 33). It would have been obvious for one of ordinary skill in the art, at the time the invention was made include Najork's teaching with Maresco and Sullivan to better load balancing the tasks by utilizing all of the empty queues while not overloading other busy queues in the system.

10. **Claims 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, 34 and 35** are rejected on the same ground as stated in claims 2 and 3 above.

11. Claims 37, 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maresco (US 6,418,458) in view of Sullivan (US Pat. 5,438,680) and further in view of Brenner et al. (US Pat. Application Publication 2003/0225815, hereinafter Brenner).

12. Regarding **claim 37**, Maresco discloses in a multithreaded computing environment, a method of processing computing tasks (abstract, col. 1, lines 15 - 21), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract, col. 1, lines 45 – 57, col. 2, lines 27 – 30, col. 3, lines 37 - 38);

defining a plurality of task queues (abstract), each task queue capable of queuing a plurality of tasks (abstract, col. 6, lines 12 - 13);

associating each task queue with a respective worker thread (col. 3, lines 49 – 60, col. 5, lines 26 – 47, col. 6, lines 13 – 17, fig. 4);

from a worker thread, processing a task from the associated task queue (abstract, col. 1, lines 45 – 57, col. 2, lines 27 – 30, col. 3, lines 37 – 38, col. 6, lines 12 – 13).

Maresco discloses of placing tasks in task queue (col. 3, lines 52 – 57) but did not clearly teach the additional limitations such as the process of:

assigning a task to a task queue in an essentially random fashion using a random number generator to identify a task queue; and

searching for an empty task queue to store the task if it is determined that the initial task queue is not empty.

Sullivan teaches the concept in which tasks are simply assigned to processors queue in a generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art, at the time the invention was made to recognize Sullivan's system inherently use a random generator to randomly select which processor queue for assigning the tasks.

Brenner teaches the concept of placing new thread/process in a run queue associated with an idle processor (page 3, paragraph 0043). It is therefore obvious to incorporate Sullivan's teaching to Maresco to optimize system performance with task assignment in a random fashion (Sullivan: col. 6, lines 55 – 61). It is also obvious for one of an ordinary skill in the art, at the time the invention was made to apply Brenner's concept in assigning processes to an empty run queue to Maresco's system so that optimal performance can be achieved with balancing processes among the system run queues.

13. **Claims 38 and 41** are rejected on the same ground as stated in claim 37 above.

Response to Arguments

14. Applicant's arguments filed 10/14/04 have been fully considered but they are not persuasive for the reason set forth below.

15. Regarding applicant's argument that the cited references do not teach or suggest associating a task queue with a respective worker thread (page 12, last paragraph – page 13, 3rd paragraph), the examiner disagrees. Marsco clearly discloses the concept of associating a task queue with a respective worker thread in col. 2, lines 27 – 30, col. 3, 37 – 38, lines 49 – 60, col. 5, lines 26 – 47, col. 6, lines 13 – 17 and fig. 4. Furthermore, the claims do not require that a task queue contain or has only one worker thread. Therefore, Marsco clearly read on the claim and this argument is moot.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cornaby, US 5,355,486: discloses of assigning task to and empty task queue.

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist at 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2195

lv
June 6, 2005


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